

## ABSTRACT

A system and method is provided for substantially synchronizing the acquisition of blood-vessel data to an identifiable portion of heartbeat data. Specifically, a data-gathering device is adapted to acquire heartbeat data and blood-vessel data from a heart-monitoring device and a data-gathering probe, respectively. In a preferred embodiment of the present invention, the blood-vessel data is acquired during a cyclical portion of the heartbeat data. By identifying a cyclical (or commonly reoccurring) portion of the heartbeat data and acquiring blood-vessel data during this cyclical portion (or during an interval that substantially corresponds thereto), the blood vessel can be analyzed as if it were standing still -- i.e., not expanding and relaxing. In one embodiment of the present invention, the heart-monitoring device includes an EKG device, the data-gathering device includes an intra-vascular ultrasound (IVUS) device and a computing device, and the data-gathering probe includes at least one transducer. In another embodiment of the present invention, the data-gathering system further includes a retraction device adapted to move the data-gathering probe through a blood vessel at a substantially steady speed.

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